



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US98/01144 (22) International Filing Date: 21 January 1998 (21.01.98) (30) Priority Data: 08/786,153 21 January 1997 (21.01.97) US 08/804,883 24 February 1997 (24.02.97) US 08/843,623 10 April 1997 (10.04.97) US		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TI, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
<p>(71) Applicant: PRESIDENT AND FELLOWS OF HARVARD COLLEGE [US/US]; 124 Mount Auburn Street, Cambridge, MA 02138-5701 (US).</p> <p>(72) Inventor: BAMDAD, Cynthia, C.; 621 Sierra Madre Boulevard, San Marino, CA 91108 (US).</p> <p>(74) Agent: OYER; Timothy, J.; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210 (US).</p> <p>(88) Date of publication of the international search report: 17 September 1998 (17.09.98)</p>			
<p>(54) Title: ELECTRONIC-PROPERTY PROBING OF BIOLOGICAL MOLECULES AT SURFACES</p> <p>(57) Abstract</p> <p>A technique for immobilizing biological molecules, in particular nucleic acid strands, is described. Biological molecules immobilized at surfaces can be used in electron-transfer detection techniques in which a binding partner of a biological molecule is brought into proximity of the surface-immobilized biological molecule, an electrical potential created between the two biologically-binding species, and electron transfer through the species determined. Another technique involves immobilizing a biological molecule such as a protein, DNA, etc., at a surface via a self-assembled monolayer, affecting the biological molecule via, for example, biological binding, inducing a change in conformation via a prion, etc., and detecting an electronic property change in the molecule via a change in impedance associated with an electronic circuit addressed by the biological molecule. This technique facilitates combinatorial array detection articles.</p>			
<img alt="Two diagrams illustrating the electronic-property probing of biological molecules. The top diagram shows a surface 22 with a grid of lines 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 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INTERNATIONAL SEARCH REPORT

I. International Application No
PCT/US 98/01144

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12Q1/68 G01N33/53

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 22678 A (Baylor College Medicine ; Houston Advanced Res Center (US); Massachusetts) 11 November 1993 see whole document, esp. claims and pages 13, line 9 ff ---	1-12, 19-39
X	CUNNINGHAM B. C. & WELLS J. A.: "Comparison of a structural and a functional epitope" J. Mol. Biol., vol. 234, - 1993 pages 554-563, XP002071221 see esp. results page 555, 2.column and figure 1a ---	40 -/-

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Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 97 44651 A (AUSTRALIAN MEMBRANE & BIOTECH ;UNIV SYDNEY (AU); HARDING MARGARET) 27 November 1997 see whole doc. esp. page 7 ,line 16 - page 8 ,line 19 and claims ---	1-12,20, 36
P,X	WO 97 41425 A (PENCE INC ;UNIV MCGILL (CA)) 6 November 1997 see whole document, esp. claims and figures ---	1-12,20, 36
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Information on patent family members

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